

November 5th, 2021

KEY TAKEAWAYS

- Cases continue to decline or plateau across the Commonwealth. Nevertheless, case rates remain high in some regions, particularly Southwest Virginia.
- So far, Virginia has not seen a repeat of increased transmission rates seen last fall. This reduces the expected impact of a potential holiday surge. Nevertheless, the model shows a large surge is possible under current vaccination rates.
- First dose vaccinations have ticked up recently, and booster shot uptake has been robust.
- Metaculus forecasters place a 30% chance on the possibility of cases exceeding the Delta surge during the 1st quarter of 2022.

16 per 100kAverage Daily Cases
Week Ending Oct. 31, 2021**(43 per 100k)**Adaptive Scenario
Forecast Average Daily
Cases **Already Peaked**
on September 19, 2021**6,446 / 4,126**Average Daily 1st / 2nd Doses
Oct. 31, 2021**25,297**Average Daily Boosters
Oct. 31, 2021

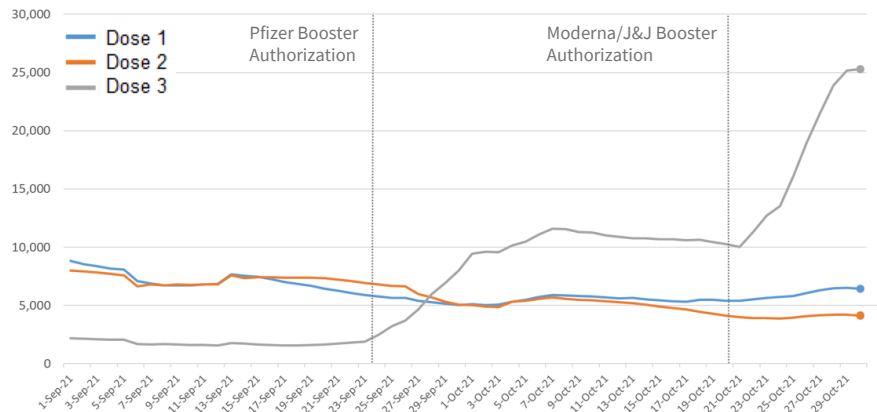
KEY FIGURES

Reproduction Rate
(Based on Confirmation Date)

Region	R_e Nov 1st	Weekly Change
Statewide	0.876	0.042
Central	0.897	0.025
Eastern	0.921	0.169
Far SW	0.912	0.066
Near SW	0.892	0.049
Northern	0.907	0.021
Northwest	0.848	0.009

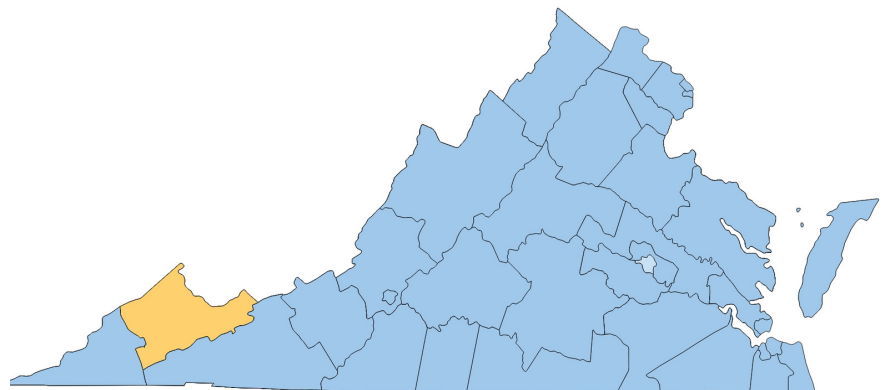
Vaccine Administrations

COVID-19 Vaccine Administration Moving Average by Dose Number



Growth Trajectories: No Health Districts in Surge

Status	# Districts (prev week)
Declining	33 (32)
Plateau	1 (3)
Slow Growth	1 (0)
In Surge	0 (0)



THE MODEL

The UVA COVID-19 Model and these weekly results are provided by the UVA Biocomplexity Institute, which has over 20 years of experience crafting and analyzing infectious disease models. It is a county-level **S**usceptible, **E**xposed, **I**nfected, **R**ecovered (SEIR) model designed to evaluate policy options and provide projections of future cases based on the current course of the pandemic. The Institute is also able to model alternative scenarios to estimate the impact of changing health behaviors and state policy.

COVID-19 is a novel virus, and the variant mix changes constantly. The model improves as we learn more.

THE SCENARIOS

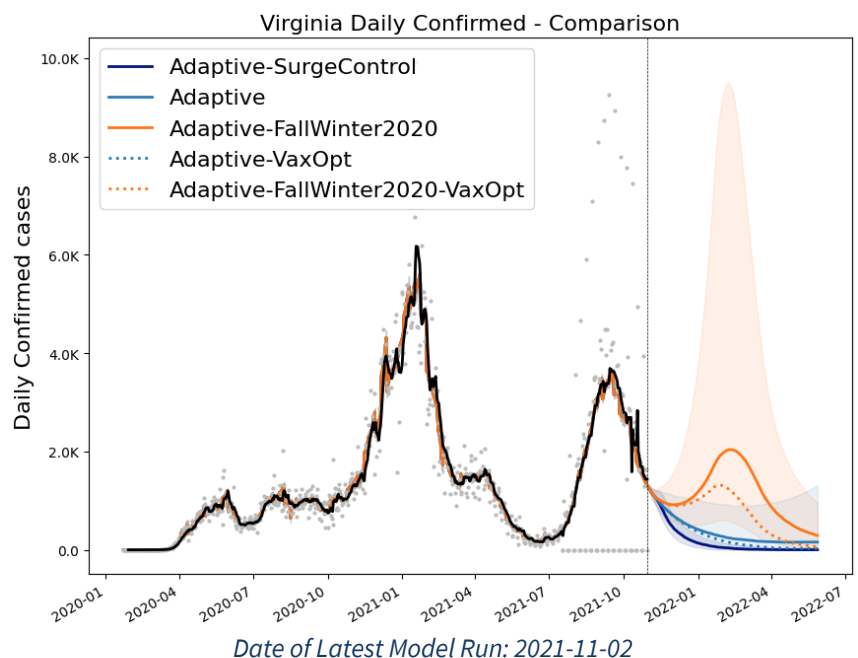
Scenarios remain unchanged from last week. The models use various scenarios to explore the path the pandemic is likely to take under differing conditions. The **Adaptive** scenario takes the current course of the pandemic at the county level, including the impact of the Delta variant and vaccines, and projects it forward. The **SurgeControl** scenario shows the likely impact of prevention and mitigation efforts (masking, social distancing, testing and isolating, etc.) by employing a 25% reduction in transmission rates. The **"FallWinter2020"** captures the transmission drivers of the entire 2020 holiday season and projects them forward. In this scenario, transmission rates from October 2021 to February 2022 are manually set to reflect the transmission rates from the same time period last year, but boosted by Delta's enhanced transmissibility.

As usual, all of these scenarios can be augmented by the **VaxOpt** (optimistic vaccine) modifier that adds to the existing scenario a hypothetical increase in vaccinations among adults and assumes vaccine eligibility for children ages 5-11 years in November. Specifically, this modifier assumes that we reach an average of 85% coverage among adults, with a minimum of 65% in each county. Note that all scenarios also include some immunity resulting from past COVID-19 infection.

MODEL RESULTS

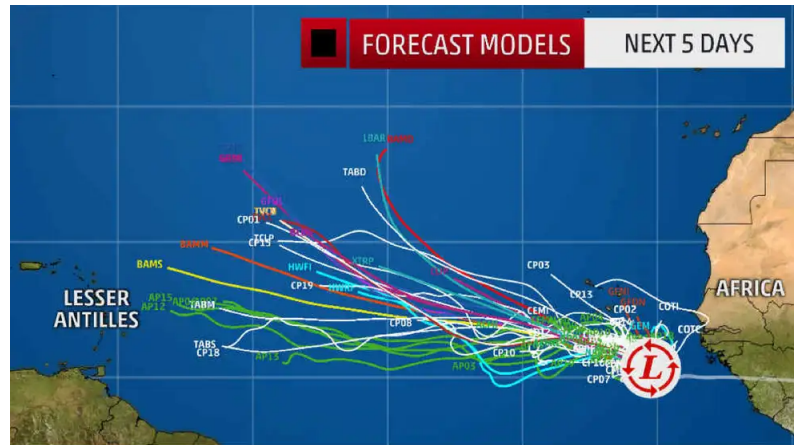
The "present course" Adaptive scenario (blue), suggests that cases have peaked and are now in a gradual decline. The SurgeControl scenario (shown in indigo) again forecasts a much faster drop-off of case rates, reaching Summer 2021 lows by early December. Conversely, the FallWinter2020 (shown here in orange), projects a potential rise in case rates possibly exceeding last January's peak.

The VaxOpt (dashed lines) scenarios, show that in the long-run, increased vaccination coverage could prevent thousands of cases in any scenario. Please do your part to stop the spread and continue to **practice good prevention**, including indoor masking, social distancing, and self-isolating when sick, and **get vaccinated** as soon as possible.



WILL THERE BE A WINTER SURGE?

The UVA Biocomplexity Institute produces projections for a number of scenarios each cycle. Each scenario provides insights for policy-makers and planners. For instance, the optimistic vaccine scenarios show us that investing time and resources promoting vaccines is likely to have a significant impact on cases, particularly reducing the impact of any potential holiday surge. Nevertheless, the most frequent question we get is "Which scenario will play out?" The UVA model is not designed to answer this question. UVA and VDH work together to develop likely scenarios with evidence-based parameters, but the models themselves - mechanistic models - simply run with the data and inputs given. It is up to humans to interpret model results and provide forecasts about what may actually occur.



A "spaghetti" plot showing projected paths of a tropical depression. Meteorologists use a combination of averaging and expert judgment to turn weather model results into useful probability cones and forecasts. Similarly, human judgement is needed to interpret results from COVID-19 models. Source: [The Weather Channel](#).

Interpreting Model Results

No one has a crystal ball, but there are a number of methods available to use model results to create forecasts and plan for the future. A simple method is to average results - the "somewhere in between" method. Rather than confidently predicting, for instance, the Adaptive scenario or the Fall/Winter 2020 scenario as most likely, averaging the two ensures you will be less wrong than at least one of those scenarios - and also less right than the other. This minimizes mistakes, but is less than optimal. To improve forecasts, it is useful to look at comparable examples. For instance, COVID cases are currently [rising in Europe](#), which has similar vaccination rates to many US states. This demonstrates that a winter surge is possible, so forecasts could lean in the direction of the Fall/Winter scenario. A good forecaster may also note that first dose vaccinations in Virginia have ticked up recently, and booster uptake has been strong, pulling forecasts closer to optimistic vaccine scenarios.

Metaculus Forecasts

Of course, there are a number of factors other than cases in Europe and recent vaccinations that a forecaster could consider. Assessing how important each of these factors are adds even more complexity. Within the past decade, researchers have worked to understand how individuals make forecasts, how to identify the best forecasters, and how to best crowdsource forecasts to improve accuracy. The multiyear [Good Judgment Project](#) described in the New York Times bestseller *Superforecasting: the Art and Science of Prediction*, demonstrated that some people are consistently better at making forecasts, and that everyone can get better with training and practice. The project also developed methods of combining forecasts to improve accuracy.

UVA and VDH have partnered with the [Metaculus](#) forecasting platform to leverage this research and provide further insight into the course of the COVID-19 pandemic in Virginia. Metaculus takes forecasts from volunteers, and uses evidence-based methods to identify the best forecasters and aggregate their predictions. As noted earlier, no one has a crystal ball, including Metaculus. But Metaculus can help us be more right more of the time when assessing the future course of the pandemic.

So what do Metaculus forecasters have to say about a winter surge? Overall, Metaculus forecasters put a [30% chance](#) on a new peak exceeding the recent Delta wave during the first quarter of 2022 - when UVA's Fall/Winter 2020 scenario expects a surge. This forecast gives us a reason to be optimistic about the coming months, but also enough warning to keep an eye on the forecast over the coming months. If you would like to try your hand at forecasting the COVID-19 pandemic in Virginia, sign up for the [Keep Virginia Safe Tournament](#) on the Metaculus forecasting platform.